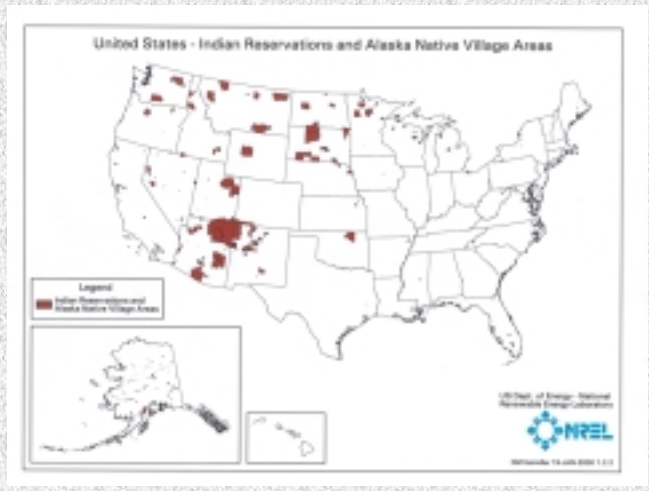
Native Americans

Bob Gough, NREL



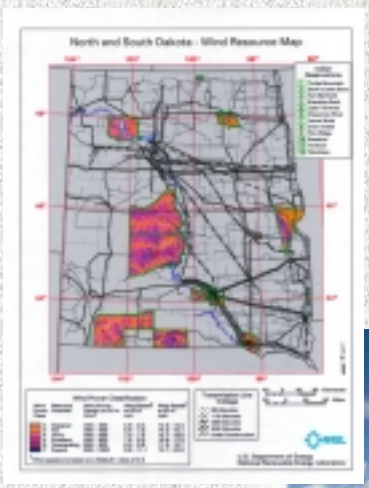
14.2 % of Indian households on reservations have no access to electricity.

Village Power Distributed Generation

- Over two million individuals are enrolled with the more than 565 federally recognized American Indian Tribes and Native Alaskan governments in the United States.
- Approximately 1.2 million Native Americans live on or adjacent to the several hundred reservations located throughout the United States. In the lower 48 states, American Indian Tribes hold about 56 million acres. In Alaska, Native corporations and villages hold some 40 million acres, where the potential for renewables includes hybrid wind-diesel and low-head hydropower systems.
- Indian households are disproportionately without electricity. Nationwide, 14.2 % of Indian households on reservations have no access to electricity, whereas only 1.4 % of all U.S. households are not served.
- Indians living on reservations located in the poorest counties in the United States, generally pay a greater portion of their income for electricity than does the average American.
- Indian lands have an abundance of developable renewable energy resources such as solar, wind, geothermal, and biomass.

Renewable Energy Development Potential

- Sixty-one reservations and Tribal Jurisdictional Statistical Areas (TJSA) in Oklahoma, which comprise approximately 50 percent of the reservation-based tribal population, appear to have abundant developable renewable energy resources.
- The levelized cost of energy for distributed photovoltaic generation ranges from 28.0 to 51.6 cents per kWh on the Navajo Reservation, which can be cost effective for a great many households that are extremely remote from existing transmission and distribution lines.
- Over 45 reservations throughout the West have been identified as having wind resources of Class 5 or better, with another 48 reservations having at least Class 4 wind areas.
- The wind power potential on Indian lands in the Dakotas exceeds 250 gigawatts, over 125 times the hydropower presently available from the main stem of the Missouri River.
- Seventeen reservations, primarily in the Southwest, have levels of solar insolation high enough (7-8 kWh/m2/day) for economic development of solar systems due to the higher capacity factors that can be achieved on these lands, with 66 other reservations at the 6-7-kWh level.
- Fifty-seven reservations may have the geothermal resources sufficient for electricity production. Another 72 reservations have the potential for direct geothermal heating, while almost all Indian lands could utilize geothermal heat pumps.
- Biomass energy, derived from forest and crop residue, must be utilized within 50 miles of the site of fuel production to be economical. Biomass energy on the Eastern Cherokee reservation in western North Carolina has the lowest incremental cost of all fuels on Indian lands.



Turtle Mountain Chippewa Reservation

- Located in a Class 5 wind regime near the Canadian border in north-central North Dakota
- 105 kW N.E.G. Micon turbine in 1996
- This reconditioned turbine has produced 150,000 kWh annually with minimal operation or maintenance problems.
- This distributed generation system powers the reservation's municipal wastewater treatment system.
- The tribe has instituted a wind-smith training and refresher course in association with the state energy office.
- Plans to expand wind generation for the export of green power depend on overcoming regional transmission constraints.

Navajo Transmission Utility Authority

- Almost 37% of all Indian households, nearly 18,000 homes, on the Navajo Reservation do not have access to electricity.
- The Navajo Tribe established its own Transmission Utility Authority to provide power to many of its remote communities.

- The Transmission Authority is implementing a program for residential electrical service and is midway through the installation of 200 renewable energy systems.
- The Navajo Tribe is investing over $2,000,000 to provide highly valued electrical service, replacing individual residential generators.